

**SHEET MEMBER IMPRESSION STRUCTURE FOR  
LABELING MACHINE**

**BACKGROUND OF THE INVENTION**

**1. Field of the Invention:**

5        The present invention relates to a labeling machine and, more specifically, to a sheet member impression structure for use in a labeling machine to keep a transferring sheet member smooth.

**2. Description of the Related Art:**

FIG. 1 shows a pair of sheet member impression devices **1a** mounted on a rod member **2a** and locked by a respective tightening up screw **3a** to impart a downward pressure to a pressure board **4a**, keeping the sheet member **5a** being transferred beneath the pressure board **4a** smooth. The pitch between the sheet member impression devices **1a** is determined subject to the size of the sheet member **5a**.

15    Each sheet member impression device **1a** comprises a cylindrical casing **11a**, a cap **12a** located on the top side of the cylindrical casing **11a**, a spring member **13a** mounted inside the cylindrical casing **11a**, and a pressure tip **14a** provided at the bottom side of the spring member **13a** and extended out of the bottom side of the cylindrical casing **11a**. The cylindrical casing **11a** has two axle holes **11a** transversely aligned at two sides near the cap **12a** and a bottom opening **112a**. The diameter of the axle holes **11a** fits the outer diameter of the rod member **2a** so that the cylindrical casing

**11a** can be firmly secured to the rod member **2a**. The diameter of the bottom opening **112a** is smaller than the inner diameter of the cylindrical casing **11a**. The pressure tip **14a** passes through the bottom opening **112a** to the outside of the cylindrical casing **11a**.

5 The spring member **13a** is adapted to adjust downward pressure of the sheet member impression device **1a**. The pressure tip **14a** is pressed on the pressure board **4a**, controlling smooth transfer of the sheet member **5a**.

The sheet member impression devices **1a** are spaced from 10 each other at a distance so that a downward pressure can be evenly applied to the pressure board **4a**, keeping the transferring sheet member **5a** smooth. When a different size of sheet member is used, the pitch between the two sheet member impression devices **1a** must be properly adjusted.

15 When adjusting the position of each sheet member impression device **1a**, a tool, for example, a screwdriver shall be used to unfasten the tightening up screw **3a**, for enabling the respective sheet member impression device **1a** to be moved along the rod member **2a** to the desired position. This pitch adjustment 20 procedure is complicated.

Further, because the contact between each sheet member impression device **1a** and the pressure board **4a** is a point contact, downward pressure may not be evenly applied from the sheet

member impression devices 1a to the pressure board 4a.

## SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention

5 to provide a sheet member impression device for labeling machine, which provides a line contact to apply a downward pressure to the pressure board in the labeling machine evenly, keeping the transferring sheet member smooth.

To achieve this and other objects of the present invention,

10 the sheet member impression structure comprises a rod member, and two sheet member impression devices mounted on the rod member and respectively pressed on a pressure board to smooth a sheet member being transferred beneath the pressure board. Each sheet member impression device comprises a casing mounted on the

15 rod member, the casing comprising an inside space, two through holes aligned at two sides in communication with the inside space and adapted to accommodate the rod member, a side opening, and a bottom hole; an adjustment unit mounted in the inside space inside the casing below the rod member and partially extended out of the

20 side opening of the casing for operation by the user to adjust the position of the casing on the rod member; a spring member mounted in the inside space inside the casing below the adjustment unit; and a press member mounted in the inside space inside the

casing and supported on a bottom side of the spring member and partially extended out of the bottom hole of the casing and forced by the spring member to press on the pressure board.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

5 FIG. 1 is an elevational view of a part of a labeling machine, showing sheet member impression devices mounted on a rod member and pressed on a pressure board according to the prior art.

10 FIG. 2 is an elevational view of a part of a labeling machine, showing sheet member impression devices mounted on a rod member and pressed on a pressure board according to the present invention.

FIG. 3 is an exploded view of the sheet member impression devices shown in FIG. 2.

15 FIG. 4 is a cutaway view in an enlarged scale of a part of FIG. 2.

FIG. 5 is a sectional view in an enlarged scale taken along line 5-5 of FIG. 2.

20 FIG. 6 is an elevational view of a continuously S-shaped spring leaf for use in the sheet member impression device according to the present invention.

FIG. 7 is an exploded view of an alternate form of the sheet member impression device according to the present invention.

FIG. 8 is an exploded view of another alternate form of the

sheet member impression device according to the present invention.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to FIGS. 2~5, a sheet member impression structure is shown comprising a rod member 2, which has a plurality of locating holes 21 longitudinally arranged in a line, and two sheet member impression devices 1 mounted on the rod member 2 and respectively pressed on a pressure board 4 to smooth the sheet member 5 being transferred beneath the pressure board 4. Each sheet member impression device 1 is comprised of a casing 11, an adjustment unit, a retaining device 16, a spring member 14, and a press member 15.

Referring to FIGS. 3~5, the casing 11 is a hollow member having a horizontal top wall 111, two opposite vertical faces 112 at front and back sides thereof, two opposite vertical lateral sidewalls 113, two through holes 114 respectively formed in the two opposite vertical lateral sidewalls 113 adjacent the horizontal top wall 11 and horizontally aligned in a line in communication with the inside space thereof for accommodating the rod member 2, one opening 115 in one vertical face 112, two coupling holes 117 symmetrically disposed at two sides below the elevation of the through holes 114, and a bottom hole 116 in the bottom side thereof.

The adjustment unit is mounted inside the casing 11 below the rod member 2 and partially extended out of the opening 115 for

operation by the user to adjust the operation height of the respective sheet member impression device 1. The adjustment unit is comprised of a first adjustment wheel 12 and a second adjustment wheel 13. The first adjustment wheel 12 is partially suspended inside the casing 11 below the rod member 2 and partially extended out of the casing 11 through the opening 115, having a ratchet 122 located on the bottom side, an embossed peripheral wall 123 for positive positioning of the user's finger to rotate the first adjustment wheel 12, and signs 124 on the top surface for indications of different operation heights. The second adjustment wheel 13 is a hollow wheel member mounted inside the casing 11 below the first adjustment wheel 12, having a top ratchet 131 meshed with the ratchet 122 of the first adjustment wheel 12.

The retaining device 16 is provided between the adjustment unit and the rod member 2 and adapted to selectively lock the respective sheet member impression device to one of the locating holes 21 of the rod member 2. According to the present preferred embodiment, the retaining device 16 is a spring-supported steel ball embedded in the center of the top surface of the first adjustment wheel 12 and partially protruding over the top surface of the first adjustment wheel 12.

The spring member 14 is mounted inside the second adjustment wheel 13, and adapted to impart a downward pressure to

the press member 15. The spring member 14 can be a compression spring (see FIGS. 2~5), or a continuously S-shaped spring leaf (see FIG. 6).

The press member 14 is vertically movably coupled to the 5 casing 11 and forced vertically downwards against the pressure board 4 by the spring member 14, comprising two coupling portions 151 symmetrically disposed at two sides and respectively loosely coupled to the coupling holes 117 of the casing 11, and a bottom contact wall 152 disposed in contact with the pressure board. The 10 bottom contact wall 152 is a cambered surface for line contact with the pressure board 4.

The aforesaid coupling holes 117 may be respectively formed in the two opposite vertical lateral sidewalls 113 of the casing 11 (see FIGS. 2~5), or the two opposite vertical faces 112 of 15 the casing 11 (see FIGS. 7 and 8).

Referring to FIG. 8, the bottom contact wall 152 of the press member 15 may be made having two extension portions 153 respectively outwardly extended from the two ends thereof in reversed direction, increasing the contact area between the press 20 member 15 and the pressure board 4. According to the embodiment shown in FIG. 8, the casing 11 has two side openings 118 respectively formed in the two opposite vertical lateral sidewalls 113 at the bottom side for the passing of the extension portions 153

of the bottom contact wall 152 of the pres member 15.

Referring to FIG. 9, the he bottom contact wall 152 of the pres member 15 can be a flat contact wall instead of the aforesaid cambered surface.

5 When in use, the user can move each sheet member impression device 1 along the rod member 2 to shift the retaining device (spring-supported steel ball) 16 from one locating hole 21 to another, adjust the pitch between the sheet member impression devices 1 as desired. Because the contact between the contact 10 portion 152 of the press member 15 of each sheet member impression device 1 and the pressure board 4 is a line contact, downward pressure is evenly applied from the sheet member impression devices 1 to the pressure board 4 to keep the transferring sheet member 5 smooth.

15 A prototype of sheet member impression device has been constructed with the features of FIGS. 2~9. The sheet member impression device functions smoothly to provide all of the features discussed earlier.

Although particular embodiments of the invention have 20 been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.